Drum Tippling Clamp

T 416H, T 406H
T 416U, T 406U
T 416 2H, T 406 2H
T 416 2U, T 406 2U

T 416H  Drum Tippling clamp with sideshift and one-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 416U  Drum Tippling clamp with sideshift and one-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 406H  Drum Tippling Clamp without sideshift and one-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 406U  Drum Tippling Clamp without sideshift and one-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 416 2H  Drum Tippling clamp with sideshift and two-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 416 2U  Drum Tippling clamp with sideshift and two-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 406 2H  Drum Tippling Clamp without sideshift and two-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
T 406 2U  Drum Tippling Clamp without sideshift and two-sided hydraulic drive, suited to be used for moving 1 cylindrical steel drums.
# Operating Manual

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Our service department in Aschaffenburg will be happy to answer your technical questions and to provide additional support.

Technical Support:
0049 (0) 6021 865 395
0049 (0) 6021 865 284
0049 (0) 6021 865 352

Orders for spare parts Domestic
0049 (0) 6021 865205
0049 (0) 6021 865251

Orders for spare parts Export
0049 (0) 6021 865344
0049 (0) 6021 865348

Outside of normal business hours the Kaup – Service Hotline is available to you 365 days a year:
0049 (0) 172 6295 297
Monday - Friday: 5 pm to 7 am
Saturday and Sunday: 8 am to 6 pm

Kaup GmbH & Co KG • Braunstr. 17 • D-63741 Aschaffenburg • email: kaup@kaup.de • www.kaup.de
1. Introduction

1.1 Working with this manual

This operating manual contains important information on how to operate the attachment properly, safely and efficiently.

The operating manual shall be read, understood and applied by all personnel working on or with the equipment, for example:

- Installation and operating the equipment
- Inspection, maintenance and repair
- Transport and disposal

The manual must be kept available for ready reference at the equipment's place of use.

The illustrations in this operating manual may deviate from the actual version of the equipment.

1.2 Warning notes and symbols

The following symbols are used in this operating manual to highlight details of special importance:

⚠️ Identifies details relating to do's and don'ts for the purpose of avoiding injury and property damage.

💡 Specific details relating to the efficient use of the attachment and other advice.

_lists_ Lists are denoted by a shadowed box.

- Steps to be performed by the operator are denoted by a black dot.

(1) In illustrations, particular elements have numbered pointers. Numbers in brackets in the text refer to the corresponding elements.

1.3 Copyright

This documentation including all parts is copyrighted. Any use or change outside the narrow limits of copyright law without permission from KAUP GmbH & Co KG is forbidden and liable to prosecution. This applies, in particular, to reproduction, translation, microfilming as well as storage and processing in electronic systems.
1.4 **CE-Mark**

KAUP-Attachments carry the CE-mark. The EC Declaration of Conformity ensures that the attachment conforms to the EC machinery guideline.

1.5 **Qualified and authorised personnel**

Qualified and authorised personnel are equipped by way of their education and training to perform the tasks assigned to them in accordance with accepted practice and safety regulations. They are assigned tasks by the equipment owner.

1.6 **Warranty claims based on defects**

KAUP shall not be liable for any damage to the equipment resulting from:

- Improper use / operation.
- Modifications to components.
- Inappropriate installation, maintenance, inspection and servicing.
- Assignment of unqualified or non-authorised personnel.
- Claims raised by third parties.

1.7 **Limits of applicable use**

KAUP-attachments are intended for use under the following climatic conditions:

- Average ambient temperature for continuous operation: +25°C
- Allowable maximum ambient temperature, short term (up to 1h): +40°C
- Allowable minimum ambient temperature for attachments intended for indoor use: +5°C
- Allowable minimum ambient temperature for attachments intended for outdoor use: -20°C

Standard models of KAUP-attachments are NOT suitable for:

- Use in cold storage facilities.
- Use in explosive environments.
- Use in conjunction with hydraulic systems involving biological oils.
- Use in rough environmental conditions (e.g. seawater)
- The transport of acidic liquids.
2. Safety aspects

As the user, extend the safety instructions with generally applicable, legal and other measures that ensure a safe and environmentally friendly operation of the attachment.

Pay close attention to all safety- and danger-related signs on the attachment and in this operating manual. Failure to observe these can result in severe injury or even death.

Pay close attention to the operating manual provided by the manufacturer of the fork lift truck.

Keep a safe distance away from moving, reciprocating or rotating parts of the attachment to avoid danger of crushing, pinching or entanglement.

Notify the responsible department/person immediately of changes and faults in operation of the attachment that affect safety. The attachment shall be shut down.

Use aids to vision (e.g. mirrors, camera, etc.) where goods being transported obstruct vision.

Only allow work on the attachment to be carried out by qualified and authorised persons. Adhere to the legal minimum age in the country of operation!

The attachment should only be used for the purpose intended.

Never work on or with attachments while under the influence of drugs, alcohol or medicines which affect reaction time.
A clamp consists of a clamp body (1) on which conduits (2) are mounted. Cylinders (4) move the conduits (2), which are equipped with sliders (3). Sideshift components (5, 6) – optional (9) - or hooks (7, 8) are optionally attached to the clamp body (1).
3.2 Drum Tippling Arms

3.2.1 Hydraulically tilting by 180°

Modell T 416H / T 406H tilting by 180° on one side
Modell T 416 2H / T 406 2H Hydraulically tilting by 180° on both sides
3.2.2 Hydraulically tilting by 90°

Modell T 416H / T 406H tilting by 90° on one side
Modell T 416 2H / T 406 2H Hydraulically tilting by 90° on both sides

3.2.3 Mechanisch endlos drehbar

Modell T 416H / T 406H Mechanically rotating infinitely
Drum tippling clamp arms consist of sections (1), welded-on back parts (2) and a rotating pressure plate (4) in a bearing (3). **Variant 3** consist of sections (1) and a welded-on plate (8). This back parts (2) will be screwed on the plate (8). These pressure plates (4) are adapted to the respective load diameter and lined with rubber (5).

For the models **T416 2H / T406 2H, T416 2U / T406 2U** that are hydraulically tilting by 180°, the pressure plates (4, 5) may be rotated through cylinders (6) to which a kinematic system (7) is attached.

For the models **T416 2H / T406 2H** that are hydraulically tilting by 90° the pressure plates (4, 5) may be rotated through cylinders (6) in bearing (3).

The arm of the **T416 H / T406 H** models that may be hydraulically tilted by 180° or 90° on one side has the same design.

The mechanically rotating arm of the **T416 H / T406 H** models has a pressure plate that may be infinitely rotated in bearing (3).

### 3.3 Efficient equipment settings on electric vehicles

Please use our reference values for setting the lift trucks and attachments. These are found at [www.kaup.de](http://www.kaup.de) in the **Services -> Product Support** section.

### 3.4 Proper use of the equipment

Drum tippling clamps are designed to transport inherently stable steel drums and to tip them forwards.

- **Model T416H / T406H**: Only pick up upright drums
- **Model T416-2H / T406-2H**: Pick up upright and lying drums
- **Model T416-2U / T406-2U**: Pick up upright and lying drums

Proper use of the machine and/or equipment includes the following:

- ☐ Observance of the operating manual at all times.
- ☐ Observance of the technical data on the identification plate on the attachment.
- ☐ Adherence to the specified inspection and maintenance instructions.
3.5 Improper use

- Exceeding the allowable load capacity and load centre.
- Dragging or pushing loads with the attachment
- Transporting or tipping plastic drums or two drums side by side.
- Transporting persons with the load or load handling devices
- Mounting auxiliary equipment on the attachment such that the original mode of usage is changed, (e.g. fork extensions) must be authorised by the manufacturer.

4. Installation and checking out

4.1 Installation

Installation and commissioning should be performed by qualified and authorised personnel only.

Pay attention to a sufficient load-carrying capacity of the lifting means.

The following are examples of preferred lifting means:

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Part-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 kg/M16</td>
<td>9710160008</td>
</tr>
<tr>
<td>1200 kg/M16</td>
<td>0360010201</td>
</tr>
<tr>
<td>2000 kg/M16</td>
<td>0360010301</td>
</tr>
</tbody>
</table>
• Using appropriate lifting means, lift the attachment at the positions indicated (1).

• Demount the lower hooks (2).

• Mount the attachment on the fork carriage of the lift truck (3).

• Check that the attachment is correctly seated in the centre lock (4).

• Mount the lower hooks (2), tightening the screws (5) with a torque of 190 Nm.

• Use pipes or hoses to connect the hydraulic ports (6) to the hydraulic ports of the lift truck.

Trucks equipped with attachments which hold the load by power (e.g. paper clamp) shall feature control(s) with a secondary action to prevent unintentional release of the load. Also take note in this respect of the operating instruction of the lift truck.

• Before initial operation, check the functions and the identification of the attachment with the movement directions of the operating elements (operating lever, joystick, etc.).

• Mount the residual carrying capacity notice and identification of the operating elements (if not already present) of the combination of lift truck/attached equipment on the lift truck.
4.1.1 Mounting attachment with quick release bottom hooks

- Remove the quick-release bottom hook by removing the cotter pin (7) and pulling the pin (8) out to the side. The hook will move down to the retainer.

- Install the attachment at the fork carrier of the lift truck.

- Install the quick-release bottom hook by moving the bracket upwards, inserting the pin (8) from the side, and securing it by the linch pin (7).

4.1.2 Installation / Uninstallation screw-on forks

- When installing or uninstalling the screw-on forks torque the screws as specified in Chapter 6.1 General.

4.2 Checking out

KAUP-attachments are delivered pre-lubricated. If the attachment has been in storage for a longer period, we recommend that it be lubricated again before being placed in service. See 6. Maintenance and onwards.

Failure of the safety devices (e.g. the pressure relief valve and the non-return valve) and incorrect connection of the controls to the actuators can cause malfunctioning of the attachment and damage to it.

After mounting and before initial operation, check the functions and the identification of the attached equipment with the movement directions of the operating elements (operating lever, joystick, etc.).
4.2.1 Bleeding the hydraulic system

- Start the lift truck.
- Move the sideshifter repeatedly in both directions to maximum extent.
- Repeatedly cycle the clamp from the fully open to the fully closed position.
- Inspect the hydraulic connections for leakage.

4.2.2 Adjustment after putting into service

The hydraulic system is under pressure. During work on hydraulic components oil spurting out can cause injuries. Unload the system in accordance with the operating instructions of the lift truck manufacturer. In the case of injuries caused by high pressure oil, inform the works physician and seek out a specialist immediately.

信息安全

Synchronising the arms

The synchronization of arms is adjusted ex-factory. This can alter for different friction conditions (wear), temperatures and volumes conveyed. Perform a readjustment. The recommended working temperature of the hydraulic fluid is approx. 35 °C.

The synchronization is adjustable by means of two throttles on the bottom of the cylinders.

Setting the clamping pressure with a pressure limiting valve

Attachments are adjusted ex-factory to a pressure of 160 bar.

A change in pressure is necessary only, if the load

- slips or
- is damaged.
5. Operation

5.1 General

At least once per working shift, the machine and equipment must be inspected for visible damage and defects. Repeat faults to your superior and have them rectified without delay.

Be aware of persons present in the area where you are working or driving and ensure that they are not endangered.

Do not transport any load exceeding that specified on the residual load plate for the particular combination of lift truck and attachment.

Note the load-bearing capacity of the attachment as stated on the rating plate. This figure always represents the load carried by two or more fork arms.

The nominal capacity of the forks must exceed the load.

5.2 Load handling

Position the mast vertically and take up the load parallel to the floor.

Only transport stable drums, i.e. steel drums with lids.

Never pick up drums stacked on top of each other.

Raise the load about 300 mm and tilt the mast backwards.

Centre the load to the middle of the lift truck during take-up and transport.
5.3 Driving

Ensure a proper state of the drums.

Do not drive with the mast tilted forward.

Take care when driving that neither the attachment nor the load comes into contact with the ground.

5.4 Tip

Tipping can cause damage to the load and the attachment. Ensure sufficient distance of the load to the floor, the ceiling, to shelves, etc.

Only tip loads parallel to the floor (set lifting frame vertically).

Do not tip loads if there are people in the working area.

Tip raised loads slowly. Fast tipping can influence the stability of the lift truck.

Ensure that carrying equipment, e.g pallets, crates, containers are not tipped off during tipping.

Ensure that fork arms and arms that clamp a load are closer together at the tips than at the back. As a result you need a larger clearance for moving in.

6. Maintenance and servicing

6.1 General

Regular maintenance is essential to ensure reliable operation and long service life of the KAUP attachment.

Ensure that maintenance and servicing are performed by qualified and authorised personnel only.

Lubrication and cleaning work on the attachment may also be performed by the lift truck operator.
Perform maintenance and servicing work only when the attachment is parked securely on a stable, level foundation. For installing and removing, it is recommended to use a pallet to take the attachment. The attachment can thus be securely placed and transported.

Pay attention to a sufficient load-carrying capacity of the lifting means.

Replace missing or defective warning signs on the attachment.

Do not use third party spare parts. Through poor quality or incorrect matching they can result in a risk of accident. The EC Declaration of Conformity by the manufacturer becomes invalid and you assume full responsibility in the case of accident. Use only original spare parts from the manufacturer.

The hydraulic system is under pressure. During work on hydraulic components oil spurting out can cause injuries. Unload the system in accordance with the operating instructions of the lift truck manufacturer. In the case of injuries caused by high pressure oil, inform the works physician and seek out a specialist immediately.

Screw connections can loosen due to vibration of the attachment. During routine maintenance check that screw connections are correctly torqued and replace screws which are visibly damaged.

Note the following tightening torques which are valid for screws with connecting surfaces according to ISO 4762, ISO 4014, ISO 4032 etc.:

<table>
<thead>
<tr>
<th>Screw/bolt rating</th>
<th>8.8</th>
<th>10.9</th>
<th>12.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6 thread</td>
<td>9.3Nm</td>
<td>14Nm</td>
<td>16Nm</td>
</tr>
<tr>
<td>M8 thread</td>
<td>23Nm</td>
<td>33Nm</td>
<td>39Nm</td>
</tr>
<tr>
<td>M10 thread</td>
<td>45Nm</td>
<td>66Nm</td>
<td>77Nm</td>
</tr>
<tr>
<td>M12 thread</td>
<td>77Nm</td>
<td>115Nm</td>
<td>135Nm</td>
</tr>
<tr>
<td>M16 thread</td>
<td>190Nm</td>
<td>280Nm</td>
<td>330Nm</td>
</tr>
<tr>
<td>M20 thread</td>
<td>385Nm</td>
<td>550Nm</td>
<td>640Nm</td>
</tr>
</tbody>
</table>

During any disassembly operations, be sure that parts to be disassembled can easily be removed. For removing parts, use the clearance between bolts and the parts to be removed.

Our service videos available at www.kaup.de in the Online Services section may be used for assistance as necessary.
Failure of the safety devices (e.g. the pressure relief valve and the non-return valve) and incorrect connection of the controls to the actuators can cause malfunctioning of the attachment and damage to it. After mounting and before initial operation, check the functions and the identification of the attached equipment with the movement directions of the operating elements (operating lever, joystick, etc.).

6.2 Significant modification

Significant modifications are, for example, those which affect the stability, performance, speed and strength of components.

The EC Declaration of Conformity is invalidated by a significant modification of the attachment.

Modifications to the attachment may only be made with prior approval by the manufacturer.

6.3 Schedule for routine maintenance and lubricants

<table>
<thead>
<tr>
<th>Lubricants approved and recommended by KAUP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greases</strong></td>
</tr>
<tr>
<td>Lithium soap grease</td>
</tr>
<tr>
<td>NLGI Class 2</td>
</tr>
<tr>
<td>e.g. Avialith 2</td>
</tr>
<tr>
<td>Complex soap grease</td>
</tr>
<tr>
<td>NLGI Class 2</td>
</tr>
<tr>
<td>e.g. Turmogrease Gel M 5</td>
</tr>
<tr>
<td>Teflon spray</td>
</tr>
<tr>
<td>e.g. Wieds or Rivolta</td>
</tr>
</tbody>
</table>

The specified maintenance schedules can change as a result of the operating conditions such as extreme cold, heat and dust or poor ground conditions and this must be taken into account by the owner.

With other loads, such as fork arms with a length of over 2,400 mm or raised load centres, amended/shorter maintenance intervals should be agreed by the user with the manufacturer.
6.3.1 Clamp

6.3.2 Mounting (with or without sideshift)
Daily

Check all lines, hoses and connections for leakage and damage.

After 50h / every 500h thereafter

Check:
- Screws (11) on the sideshifter housing (12).
- Screws (17) on the upper hooks (18).
- Screws (13) on the lower hooks (14).
- Screws (19) on the spacer (20).
- Screws (21, 22) on the lower quick release bottom hooks (23) – optional -.

Replace loose or damaged screws. Torque the screws as specified in Chapter 6.1 General.

Weekly

Grease:
- Sliding pieces (2) by way of the greasing nipples (1).
- Sliding pieces (10) by way of the greasing nipples (9).
- Supporting rollers on the lower hooks (16) as necessary.

Every 200h

Check wear on:
- Sliding pieces (2).
- Sliding pieces (10).
- Supporting rollers (15).
- Bolt (24) – optional -.

As necessary

Renew worn sliders (10) by removing the hooks (14). Remove the complete clamp body (7) in the reverse order to that described in section 4.1. Replace the sliders (10). During installation pay close attention that the sliders (10) are seated correctly. Then fit the clamp as described in section 4.1.

Replace worn sliders (2) by removing nut (5) from each cylinder (6). Pull the arms to the side to remove (see chapter 3.2). Remove the greasing nipple (1) and the screws (3, 3a). Replace the sliders (2). When installing the new sliders, make sure that the axial stops (4) are correctly seated. Remount the screws (3, 3a) and the greasing nipple (1). Push the arms into clamp body and reinstall nuts (5) of cylinders (6).
Replace defective supporting rollers (15) in the hooks (14) by removing the screws (13). Using suitable hoisting gear tilt the clamp body (7) forwards away from the fork carriage on the lift truck. Remove the bolts in the hooks, remove the defective supporting rollers (15) and replace them with new ones. Remount the clamp body (7) in the reverse order.

After installing or removing a cylinder (6), always check the clearance between the cylinder mount and nut of the cylinder (8). Cylinders are installed with axial clearance of 1.5 to 2 mm.
6.3.3 Drum tippling clamp arm, hydraulically tilting by 180°
6.3.4 Drum tippling clamp arm, hydraulically tilting by 90°

T 406H / T 416H
T 4062H / T 416H
Variant 1

T 406H / T 416H
T 4062H / T 416H
Variant 2
6.3.5 Drum tippling clamp arm, mechanically rotating

After 50h / every 500h thereafter

Check:
- (31) on the cover coatings (32) / pressure plates (33). Model T416 U / T 406U / T416 2U / T 406 2U
- (37, 38) on the cover coatings (39, 40) / pressure plates (41). Modell T416H / T 406H / T416 2H / T 406 2H
- (42) on the back parts (43) / plates (44). Modell T416H / T 406H / T416 2H / T 406 2H

Replace loose or damaged screws. Torque the screws as specified in Chapter 6.1 General.

Weekly

Grease
- Sleeve bearing (1) by way of the greasing nipples (2).
- ball-and-socket joint (3) by way of the greasing nipples (4).
- ball-and-socket joint (5) by way of the greasing nipples (6).
- Sleeve bearing (7) by way of the greasing nipples (8).
- ball-and-socket joint (9) by way of the greasing nipples (10).

Every 200h

Check wear on:
- Sleeve bearing (1) and (7).
- bolts (11), (12), (13), (14) and (35).
- Bearing (15).
- rubber coat (16, 32, 39, 40).
- ball-and-socket joint (3), (5) and (9).

Replace worn pieces.
As necessary

Model, hydraulically tilting by 180° (Figure 6.3.3)

Renew worn sleeve sleeve bearing (1) and bearing (15) by removing the circlip (17), washer (18), and circlip (12). Pull out the pressure plate (20) to the side and replace any defective parts. Refit all parts again in the reverse order.

Renew a worn sleeve bearing (7) by removing the circlip (21) of the bolt (11) and washer (22). Pull out the bolt (11) to the side and replace any defective parts. Refit all parts again in the reverse order.

Renew worn ball-and-socket joints (3) in the lever (25), by removing the circlip (23), (21) and washer (22). Pull out the bolt (11) and (13) to the side and replace any defective parts. Refit all parts again in the reverse order.

Renew worn ball-and-socket joints (5) in the lever (25), by removing the circlip (24) and washer (19). Pull out the bolt (14) to the side and replace any defective parts. Refit all parts again in the reverse order.

Renew worn ball-and-socket joints (9) in the lever (26), by removing the circlip (17) washer (18) and circlip (27). Pull out the pressure plate (20) to the side. Remove the retaining rings (28) in the lever (26) and replace defective parts. Refit all parts again in the reverse order.

Renew worn rubber covering (32, 39, 40), by removing the screws (31, 37, 38). Replace defective rubber covering (32, 39, 40) and remount the screws (31, 37, 38).

Model, hydraulically tilting by 180° (Figure 6.3.3):

Variant 1: Renew worn sleeve bearing (1) and bearing (15) by removing the circlips (21) of the pin (11) and washer (22). Pull the pin (11) and the pressure plate (20) out to the side. Replace faulty parts. Reinstall the pressure plate (20), pin (11), washers (22) and circlips (21).

Variant 2: Renew worn sleeve bearing (1) and bearing (15) by removing the circlip (17), washer (18) and circlip (21) of the pin (11). Pull out the complete pressure plate (20) to the side and replace any defective parts. Reinstall the complete pressure plate with circlip (17), washer (18) and circlip (21) on pin (11).

Variante 2: Renew pressure plate (34) or pin (35), by removing split pin (36) and washer (37). Replace any defective parts. Reinstall the pin (35) with washer (37) and split pin (36).
Models, hydraulically tilting by 180° or 90° (Figures 6.3.3 and 6.3.4):

Renew defective or leaky cylinders (26) by removing the hydraulic lines from the cylinder (26) with the hydraulic system depressurised. Remove the circlip (21) and split pin (30). Pull out the bolt (11) and (12) to the side and replace any defective parts. Reinstall the pins (12) and (11) using split pin (30), circlips (21) and the hydraulic lines.

Model, mechanically rotating (Figure 6.3.5):

Renew worn sleeve bearings (1) and bearings (15) by removing the circlips (17) and washer (18). Pull the pressure plate (20) out to the side and replace faulty parts. Reinstall the pressure plate (20) including washer (18) and circlips (17).

6.3.6 Identification plate and caution board

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>KAUP order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identification plate</td>
<td>only by quality department</td>
</tr>
<tr>
<td>2</td>
<td>Before putting into operation carefully read and take note of the operating and security instructions.</td>
<td>0100016401</td>
</tr>
</tbody>
</table>
Never reach into the unit as long as parts could still be moving due to the danger of squashing or shearing. 0100016601

Use suspension point! 0100015001

KAUP – order number without, engraved in the material

Do not transport two bins at the same time 0100016201

### Troubleshooting

Troubleshooting should only be performed by qualified and authorised personnel.

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening and closing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ No synchronism</td>
<td>WE throttles on the cylinder unequally adjusted</td>
<td>Adjust the WE throttles on the cylinder</td>
</tr>
<tr>
<td>□ Movement too slow</td>
<td>Insufficient fluid flow from truck's hydraulics</td>
<td>Increase flow rate of truck's hydraulics</td>
</tr>
<tr>
<td>□ Load not holding</td>
<td>Pressure too low</td>
<td>Increase the pressure from the lift truck</td>
</tr>
<tr>
<td></td>
<td>Pressure too low on pressure relief valve</td>
<td>Increase pressure on the pressure relief valve</td>
</tr>
<tr>
<td>Cylinders have internal leaks</td>
<td>Replace sealing kits</td>
<td></td>
</tr>
</tbody>
</table>

| Clearance | | |
| □ Carriage has too much clearance | Slider is worn | Replace sliders |
| □ Carriage tilts at outer limit | Slider is worn | Replace sliders |
| □ Carriage rubbing against guide section | Slider is worn | Replace sliders |
### Faults and Corrections

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil leakage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✗ At cylinder</td>
<td>WE throttle leaky</td>
<td>Replace the WE throttle</td>
</tr>
<tr>
<td></td>
<td>Sealing kit defective</td>
<td>Replace sealing kit</td>
</tr>
<tr>
<td></td>
<td>Screw fitting is leaking</td>
<td>Tighten / seal screw fitting</td>
</tr>
<tr>
<td></td>
<td>Piston rod scored</td>
<td>Replace piston rod and sealing kit</td>
</tr>
<tr>
<td><strong>Sidewinder</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>When shifting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✗ Too slow</td>
<td>Pressure supplied by FFZ too low</td>
<td>Increase pressure at the FFZ</td>
</tr>
<tr>
<td></td>
<td>Bore of the throttle valve too small</td>
<td>Re-bore the throttle valve or replace it with a larger one</td>
</tr>
<tr>
<td>✗ Jerky shifting action</td>
<td>Supporting roller defective</td>
<td>Replace supporting roller</td>
</tr>
<tr>
<td></td>
<td>Sliders not properly lubricated</td>
<td>Lubricate sliders</td>
</tr>
<tr>
<td>✗ Supporting roller does not rotate</td>
<td>Supporting roller defective</td>
<td>Replace supporting roller</td>
</tr>
<tr>
<td>✗ Housing scrapes on the conduit</td>
<td>Slider is worn</td>
<td>Replace sliders</td>
</tr>
<tr>
<td>✗ No cushion for backward position</td>
<td>Cushion for backward position defective</td>
<td>Replace piston rod</td>
</tr>
<tr>
<td><strong>Oil leakage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✗ Leaking</td>
<td>Screw fitting is leaking</td>
<td>Tighten / seal screw fitting</td>
</tr>
<tr>
<td></td>
<td>Sealing kit defective</td>
<td>Replace sealing kit</td>
</tr>
<tr>
<td></td>
<td>Piston rod scored</td>
<td>Replace piston rod and sealing kit</td>
</tr>
</tbody>
</table>
## Faults and Corrections

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drum Tippling Arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tipping forwards and back</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>❑ No synchronism</td>
<td>WE throttles on the cylinder unequally adjusted</td>
<td>Adjust the WE throttles on the cylinder</td>
</tr>
<tr>
<td>❑ Movement too slow</td>
<td>Insufficient fluid flow from truck's hydraulics</td>
<td>Increase flow rate of truck's hydraulics</td>
</tr>
<tr>
<td>❑ Load not holding</td>
<td>Pressure too low</td>
<td>Increase the pressure from the lift truck</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pressure too low on pressure relief valve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cylinders have internal leaks</td>
</tr>
<tr>
<td><strong>Clearance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>❑ Bearing points have excessive</td>
<td>Sleeve bearing is worn</td>
<td>Replace sleeve bearing</td>
</tr>
<tr>
<td>clearance</td>
<td>Bolt is worn</td>
<td>Replace bolt</td>
</tr>
<tr>
<td></td>
<td>Ball-and-socket joint is worn</td>
<td>Replace ball-and-socket joint</td>
</tr>
<tr>
<td><strong>Oil leakage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>❑ At cylinder</td>
<td>WE throttle leaky</td>
<td>Replace the WE throttle</td>
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<td></td>
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</tr>
</tbody>
</table>

**Legend:**
- FFZ = lift truck, DBV = Pressure relief valve, WE-Drossel = elbow-type screwed throttle

### 8. Disposal

Prevent environmental damage by disposing of the following items properly in accordance with relevant national regulations:

- Hydraulic fluids, greases, lubricants and soiled working materials (Cleaning rags, etc.)
- Packaging material (Pallets, straps, cartons and plastic sheeting)

After decommissioning, the attachment should be disposed of in accordance with local legislation and regulations.

### 9. Transport

During transport of the attachment, care should be given to using appropriate means of support (e.g. pallets). These must not be damaged. The attachment must be secured against slipping or tipping over on the support.
10. Decommissioning and storage

If the attachment is to be stored for an extended period, all hydraulic connectors must be sealed against contamination and damage. Store the attachment in a clean, dry environment.

11. Spare parts list (not part of the Operating Manual)

12. EC Declaration of Conformity (Summary)

KAUP GMBH & Co. KG •
Braunstraße 17 •
D-63741 Aschaffenburg

we hereby declare that the machinery

<table>
<thead>
<tr>
<th>Model:</th>
<th>Drum Tippling Clamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>T 416 H, T 406 H, T416 2H, T 406 2H</td>
</tr>
<tr>
<td></td>
<td>T 416 U, T 406 U, T416 2U, T 406 2U</td>
</tr>
</tbody>
</table>

conforms to the latest valid version of the Machinery Directive 2006/42/EG.

The person authorised to compile the technical documents:

see EC-Declaration of Conformity

KAUP GmbH & Co. KG